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CLAIMS

1. A method, comprising:
 - a link receiver providing a plurality of data credits to a link transmitter;
 - 5 the link transmitter transmitting a plurality of packets to the link receiver on an ingress link, wherein the ingress link has a forward link and a reverse link, and wherein the plurality of packets are transmitted on the forward link;
 - the link receiver storing the plurality of packets in a plurality of receiver buffers;
 - the link receiver updating a free buffer pool; and
 - 10 the link receiver transmitting a flow control packet to the link transmitter on the reverse link if the free buffer pool contains additional data credits and the reverse link is idle, wherein the flow control packet comprises the additional data credits.
2. The method of claim 1, wherein the link receiver updating the free buffer pool
 - 15 comprises the link receiver updating the free buffer pool as one of the plurality of packets is transmitted out of the plurality of receiver buffers.
3. The method of claim 1, wherein the flow control packet notifies the link transmitter of an empty portion of the plurality of receiver buffers.
- 20 4. The method of claim 1, wherein one of the plurality of data credits corresponds to one of the plurality of receiver buffers being empty.
5. The method of claim 1, further comprising wherein the link transmitter has a
 - 25 plurality of logical channels, and wherein the link transmitter selects to which of the plurality of logical channels to allocate the additional data credits.
6. The method of claim 1, further comprising wherein the link transmitter has a
 - plurality of logical channels, and wherein the link receiver selects to which of the plurality
 - 30 of logical channels to allocate the additional data credits.
7. The method of claim 1, wherein the link transmitter and the link receiver operate in a switch fabric network.

8. The method of claim 7, wherein the switch fabric network is one of an Infiniband network and a Serial RapidIO network.

5 9. A switch, comprising:

a plurality of receiver buffers coupled to receive a packet from a link transmitter on an ingress link having a forward link and a reverse link, wherein the packet is stored in the plurality of receiver buffers;

a free buffer pool; and

10 a link receiver flow control algorithm, wherein the link receiver flow control algorithm transmits a flow control packet to the link transmitter on the reverse link if the free buffer pool contains additional data credits and the reverse link is idle, wherein the flow control packet comprises the additional data credits.

15 10. The switch of claim 9, wherein the flow control packet notifies the link transmitter of an empty portion of the plurality of receiver buffers.

11. The switch of claim 9, wherein one of the plurality of data credits corresponds to one of the plurality of receiver buffers being empty.

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12. The switch of claim 9, further comprising wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of the plurality of logical channels to allocate the additional data credits.

25 13. The switch of claim 9, further comprising a link receiver, wherein the link transmitter has a plurality of logical channels, and wherein the link receiver selects to which of the plurality of logical channels to allocate the additional data credits.

14. The switch of claim 9, further comprising a link receiver, wherein the link
30 transmitter and the link receiver operate in a switch fabric network.

15. The switch of claim 14, wherein the switch fabric network is one of an Infiniband network and a Serial RapidIO network.

16. A computer-readable medium containing computer instructions for instructing a processor to perform a method of updating a link transmitter, the instructions comprising:

- 5 a link receiver providing a plurality of data credits to the link transmitter;
 the link transmitter transmitting a plurality of packets to the link receiver on an ingress link, wherein the ingress link has a forward link and reverse link, and wherein the plurality of packets are transmitted on the forward link;
 the link receiver storing the plurality of packets in a plurality of receiver buffers;
10 the link receiver updating a free buffer pool; and
 the link receiver transmitting a flow control packet to the link transmitter on the reverse link if the free buffer pool contains additional data credits and the reverse link is idle, wherein the flow control packet comprises the additional data credits.

- 15 17. The computer-readable medium of claim 16, wherein the link receiver updating the free buffer pool comprises the link receiver updating the free buffer pool as one of the plurality of packets is transmitted out of the plurality of receiver buffers.

- 20 18. The computer-readable medium of claim 16, wherein the flow control packet notifies the link transmitter of an empty portion of the plurality of receiver buffers.

19. The computer-readable medium of claim 16, wherein one of the plurality of data credits corresponds to one of the plurality of receiver buffers being empty.

- 25 20. The computer-readable medium of claim 16, further comprising wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of the plurality of logical channels to allocate the additional data credits.

- 30 21. The computer-readable medium of claim 16, further comprising wherein the link transmitter has a plurality of logical channels, and wherein the link receiver selects to which of the plurality of logical channels to allocate the additional data credits.

22. The computer-readable medium of claim 16, wherein the link transmitter and the link receiver operate in a switch fabric network.

23. The computer-readable medium of claim 20, wherein the switch fabric
5 network is one of an Infiniband network and a Serial RapidIO network.